

NATIONAL CANNERS ASSOCIATION



Information Letter



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No. 329

Washington, D. C.

October 26, 1929

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Results of Feeding Experiments with Canned Foods Containing Tin

The results of the investigation of the pharmacology of tin, undertaken on a new basis in 1925 by the former Bureau of Chemistry of the U. S. Department of Agriculture, are to be published by the Bureau of Chemistry and Soils, according to a letter received by the National Canners Association from the chief of that bureau, Dr. Henry G. Knight: In concluding his letter regarding the investigation, Dr. Knight summarizes its results, so far as canned foods are concerned, in the following language:

"Our own experimental work, involving the ingestion of far larger amounts of tin than any previously reported, and supported by the experimental evidence of other investigators, leads us to the conclusion that tin, in the amounts ordinarily found in canned foods and in the quantity which would be ingested in the ordinary individual diet, is for all practical purposes eliminated and is not productive of harmful effects to the consumer of canned foods."

Describing the plan of the investigation and its results, along with the findings of other investigators in this field, the letter states:

"It was planned to undertake primarily feeding experiments with both animals and human beings, in which experiments the tin ingestion should be only that normally acquired by the food in contact with tin as in canned foods. These experiments differed from all previously reported feeding or other tests with tin in that, so far as the literature reports are concerned, previous experimental work involved the feeding of

definite compounds of tin rather than the tin actually dissolved from food containers by the products packed therein. Our experiments were worked out in three groups:

"(a) In one group guinea pigs were the experimental animals and were fed canned pumpkin which contained 777 parts per million of tin. In this group of animals some were fed the tin diet for approximately five months, while others were killed periodically during the course of the feeding experiments.

"On all of these animals careful analyses were made of the various internal organs to note whether there was any retention or storage of tin. All of these tests were negative of tin. No attempts were made to collect either urinary or fecal samples from these experimental animals.

"(b) A series of cats were fed canned sardines containing 212 parts per million of tin. Some of these cats were fed for a period of 7 months, while others were killed at intervals before the expiration of the full feeding period. Here again analyses were made of the various internal organs and no evidence of the retention of tin obtained. In the cat experiments also no urinary or fecal analyses were made.

"(c) In order to determine the urinary and fecal elimination of tin a human diet squad of four subjects was used. In this experiment the four subjects were placed on a diet shown analytically to be tin free for a preliminary period of 9 days. This was followed by a tin-feeding period of 6 days in which canned pumpkin and canned asparagus were fed. The canned pumpkin was in two separate lots, one of which contained 476 parts per million and the other 363. The canned asparagus contained 361 parts per million of tin. During this tin-feeding period the four subjects ingested a total of 2,278 to 2,942 milligrams of tin with an average daily ingestion ranging in the four subjects from 426 milligrams to 490 milligrams of tin. During this tin-feeding period the diet was supplemented by such of the tin-free food as the subjects desired. Following the tin period was a return to the tin-free diet for 10 days, which period was divided into three intervals, that is, ending the third, sixth, and tenth days. The urine and feces eliminated by each of the subjects were composited for each of the periods indicated and analyses made for tin. In the urinary samples no tin was found in either the pre-tin, tin, or post-tin periods. In the tin period fecal analyses showed the greatest elimination of tin, with diminishing amounts in the three samplings of the post-tin period with measurable quantities of tin still present

ten days after the tin-feeding period. The elimination of tin through the feces in these human experiments showed 76, 73.8, 91.4, and 91.2 percentages respectively, for the four subjects.* It may be stated that neither during the tin-feeding period nor during the post-tin period did any of the subjects show any evidence of illness or discomfort even after ingesting such abnormally large amounts of tin-containing food.

"In considering the above mentioned findings on animals and men, it may be of interest to recall previously published results by other investigators. Lehmann in 1902 made the statement that no case is known of chronic tin poisoning from the consumption of canned foods. Some years later, in 1909, Schryver in England published the results of tests on himself in feeding the double tartrate of sodium and tin along with a normal food consumption. He found in the first week of his test 100 per cent elimination of tin in the feces; in the second week, 92.1 and in the third, 91.4 per cent, with the balance of the tin eliminated in his urine. During the first week's test he ingested 66 milligrams per day of tin, 135 milligrams per day during the second week, and 198 milligrams per day during the third week, and found no evidence of accumulation. He did similar experimental work on feeding a dog, and states that there is but little likelihood of chronic tin poisoning resulting from the ingestion of canned foods.

"Pedley of the Institute of Public Health, Columbia University, New York, made the statement in 1927 that 'in the case of tin, which is such a common metal and one which we all ingest nearly every day, it does not seem reasonable to attribute poisonous properties to it when only three cases of alleged chronic poisoning can be discovered in the literature. Until other cases are added to the list, a verdict of "not proven" must be given.'"

"A survey of the literature on so-called poisoning by tin from food does not reveal any clear-cut case in which the evidence unmistakably points toward tin as a causative agent.

"The most recent publications involving studies on the ingestion of tin are those reported by Flinn and Inouye, in 1928. In their studies with tin their rats received an average of 2 milligrams of tin per day and their results show that 98½ per cent to 99 per cent of the tin were eliminated in the feces. In the summary of their paper they make the statement that 'tin apparently does not affect the human system.'"

*It is our understanding that the full report, when published, will explain this apparent variation in tin elimination.—EDITORIAL NOTE.

Canned Tomato Imports Heavy

Record imports of canned tomatoes were made during the month of September when the receipts totaled 24,146,689 pounds, valued at 1,209,553. In the same month last year the imports were slightly over 3,820,000 pounds. Tomato paste imports were higher than for any preceding month of the year, amounting to 1,248,353 pounds. The following table shows the quantity and value of the imports for months for the first three quarters of 1928 and 1929:

	Canned Tomatoes		Tomato Paste	
	Pounds	Value	Pounds	Value
1928				
January	12,050,694	\$666,405	2,318,596	\$219,000
February	7,909,498	446,298	583,266	56,264
March	4,349,166	243,038	384,272	42,162
April	4,178,502	265,842	455,923	48,651
May	4,150,252	256,987	589,059	59,421
June	3,273,618	194,179	430,487	46,346
July	2,708,706	160,992	273,541	25,025
August	710,144	50,790	525,235	54,973
September	3,820,110	202,421	650,354	69,772
Total	43,490,791	2,493,932	6,140,833	621,618
1929				
January	11,584,835	691,913	858,699	117,092
February	10,676,374	605,650	831,029	116,933
March	9,982,128	525,188	775,996	112,281
April	7,314,409	446,300	666,977	106,149
May	10,092,992	578,653	431,038	57,743
June	9,547,189	547,610	648,921	93,820
July	5,107,359	293,480	518,560	73,769
August	1,401,104	73,684	448,586	49,624
September	21,614,689	1,209,553	1,248,353	141,156
Total	88,684,993	4,994,589	6,629,049	900,578

Water Carrier's Complaint Dismissed

The Interstate Commerce Commission has dismissed the complaint of the Luckenbach Steamship Company (Docket 17390) against rates maintained by southeastern carriers between New Orleans and Mobile on the one hand, and interior points in Southeastern Territory on the other, on traffic transported from and to Pacific Coast points through the Panama Canal.

The Luckenbach Company in its complaint alleged that these rates when applied on traffic transported through the Panama Canal were unjust and unreasonable insofar as such rates were the same as or higher than the rates over the same railroads between the same points on like traffic which was not transported by water; and as compared with the divisions of rates received by the railroads on like traffic when moving to or from the Coast by all-rail routes, were unduly preferential of the transcontinental railroads. In dismissing the case the Commission stated:

"The complainant's admitted object is to obtain a monopoly of the transportation of this competitive traffic and to deprive the transcontinental rail carriers if possible from participating therein. We do not mean to imply that it seeks to do this by anything other than legal and justifiable means. The relief which the complainant would have us grant would entirely eliminate or materially impair the competitive conditions so far, at least, as this traffic is concerned, now existing between the water and rail lines and which it is the express policy of the law to encourage and preserve."

Navy and Army Ask Bids on Canned Foods

The Navy Department is asking for bids, to be opened on November 26, on 363,000 pounds of sauerkraut, for delivery at various naval stations. Copy of schedule 2060 on which to submit bids may be obtained from the Bureau of Supplies and Accounts, Navy Department, Washington.

The Department is also requesting bids on 246,000 pounds of canned raisins (schedule 2082). The bids will be opened on November 26.

The Quartermaster Supply Officer of the Army at Brooklyn, N. Y., is asking for bids on various canned foods (Invitation No. 626-30-94), bids to be opened on November 5. Among the canned foods included are beans with pork and tomato sauce, blackberries, sour cherries, loganberries, pickles, preserves, sausages, sardines, shrimp, and soups.

Truck Crop Markets

Forwardings of 31 fruits and vegetables during the week ended October 19 increased to the season's highest point of 35,710 cars, and were 2,200 more than a year ago.

Tomato shipments decreased slightly to 690 cars, of which 570 originated in California and most of the others in Indiana and Utah. Western pear movement was down to 615 cars for the week. String beans were coming largely from Louisiana, South Carolina and Virginia, and the total of 245 cars was more than twice as many as a year ago.

Movement of 1,175 cars of California oranges was also much heavier than last season's corresponding volume. Grapefruit shipments increased further to 760 cars, of which Florida started 570, Texas 175 and Arizona a dozen.

Cabbage crop estimates have been reduced for the fall production, and the intended acreage of cabbage in States shipping

during the winter and spring is considerably less than last season. A decrease of 34,000 tons from the September estimate of Danish-type or long-keeping cabbage leaves 278,900 tons, and the forecast of production for domestic-type has been likewise reduced to 256,100 tons. Most of the decrease during September was in New York and Wisconsin, the two leading main-crop states. Four states shipping early cabbage expect a total of 34,000 acres the coming season, as against 40,000 acres last year. Florida probably will have less than half the acreage it had in 1928.

Sweet potato shipments decreased to 965 cars but were still about 70 per cent heavier than at this time last season.

Movement of apples was still on the increase and amounted to 9,615 cars during the seven-day period. Washington and Idaho were shipping most actively in the West, and the Virginias, New York and Michigan were chief sources in the East and North. About 2,800 cars came from Washington and 2,600 from the Virginias.

Commodity	CARLOT SHIPMENTS			Total this season to Oct. 10	Total last season to Oct. 20	Total last season
	Oct. 13-19 1929	Oct. 6-12 1929	Oct. 14-20 1928			
Apples, total	9,616	8,976	10,722	42,928	58,983	127,532
Eastern states	4,876	4,530	5,597	26,116	35,326	82,708
Western states	4,740	4,446	5,125	16,812	23,707	44,819
Cabbage	1,405	1,370	1,038	36,996	26,683	28,833
Carrots:						
1929 season	88	61	93	206	242	10,192
1928 season	132	98	120	10,192	6,296	7,583
Cauliflower	169	210	171	1,737	1,360	9,699
Cucumbers	88	23	8	7,163	7,349	7,468
Green peas	23	19	23	3,191	4,623	4,650
Mixed deciduous fruit ...	65	91	55	4,864	6,317	6,490
Mixed vegetables	366	412	352	28,009	29,082	32,384
Pears	616	884	700	18,102	22,917	24,439
Peppers	108	98	87	2,392	3,377	3,569
Spinach	55	52	68	9,879	10,169	10,573
String beans	244	148	107	8,047	6,935	6,707
Tomatoes	690	702	526	29,921	29,825	26,896

Business Conditions

Commercial transactions during the week ended October 19, as indicated by the volume of checks presented to the banks for payment, were smaller than in the preceding week but showed a gain over the corresponding period of 1928, according to the weekly statement of the Department of Commerce.

The movement of commodities by rail through primary channels, as indicated by data on freight car loadings covering the latest reported week, showed a slight decline from the same period of last year.

The general index of wholesale prices showed a further fractional recession from the preceding week and was lower than in the corresponding period of 1928.

Bank loans and discounts showed expansion, as compared with both the previous week and the corresponding period of last year. Interest rates on time funds averaged lower than in the preceding week but were higher than a year ago; call money rates were higher than in the previous week but were lower than a year ago.

CAR LOADINGS

	Total	Miscellaneous	Merchandise L. C. L.	Other
Week ended October 12	1,179,008	475,973	276,876	426,159
Preceding week	1,179,047	476,086	278,022	424,939
Corresponding week, 1928	1,190,711	472,624	269,892	448,225
Corresponding week, 1927	1,120,007	483,566	268,544	417,897

September Exports of Canned Foods

Exports of canned meats, canned vegetables, and canned sardines in September were considerably larger than during the same month last year, while shipments of other classes of canned foods were smaller. The quantity and value of the principal articles imported are shown in the following table, compiled from records of the U. S. Department of Commerce:

Articles	September, 1928		September, 1929	
	Pounds	Value	Pounds	Value
Canned meats, total	861,956	\$316,077	1,388,945	\$128,575
Beef	48,304	18,682	214,577	74,761
Pork	480,280	188,324	789,562	224,750
Sausage	182,103	71,819	182,120	58,180
Other	151,269	48,752	252,686	70,884
Canned vegetables, total	12,204,428	1,037,287	16,715,030	1,498,155
Asparagus	996,940	148,239	1,717,544	276,928
Baked beans, and pork and beans	1,052,507	67,111	913,784	81,040
Corn	1,086,880	63,759	1,044,427	74,614
Pears	807,261	60,224	1,345,277	104,680
Soups	7,760,799	645,225	10,361,238	856,361
Tomatoes	227,905	13,808	843,961	83,270
Other	813,627	27,816	583,816	48,262
Condensed milk	3,410,818	565,621	3,116,142	475,918
Evaporated milk	5,585,329	887,408	3,708,002	583,415
Canned fruits, total	38,764,371	3,817,942	36,706,884	4,079,061
Apples and applesauce	340,758	22,004	149,110	7,288
Apricots	3,105,972	287,605	3,252,593	349,420
Berries	1,305,331	128,238	1,483,523	160,320
Cherries	308,060	29,671	284,444	40,383
Fruits for salad	3,520,991	545,053
Peaches	11,914,632	949,500	11,191,941	1,173,417
Pears	18,705,634	1,221,361	7,593,835	918,732
Pineapple	7,634,406	621,477	8,890,173	862,138
Prunes	261,848	20,853	306,241	22,708
Other	368,224	36,269	450,531	51,801
Salmon	7,490,489	1,404,183	6,717,177	1,379,629
Sardines	4,838,563	419,200	12,197,056	946,168

Senate Begins Debate on Rate Schedules

The Senate on October 21 completed consideration of the special and administrative sections of the tariff, and immediately began debate on the items in the chemical schedule. It is planned to take up the schedules of the bill in their numerical order.

In completing its work on the special and administrative sections the Senate adopted the debenture plan of farm relief as an amendment to the bill. It also wrote into the bill various amendments relating to the investigation of methods of valuation, liability of the consignee of merchandise, appeals from findings of the Tariff Commission to the Court of Customs, and restriction of the time limit for storing grain under bond. By rejecting a motion to recommit the bill to the committee with instructions to strike out all but the special and administrative sections and the sugar, tobacco, and agricultural schedules, it paved the way to immediate consideration of the various schedules.

Fiscal Year Exports of Canned Foods

The following table has been compiled from the records of the Department of Commerce, showing the exports of the principal canned foods during the fiscal years ending June 30, 1928 and 1929:

Articles	Fiscal year, 1928		Fiscal year, 1929	
	Pounds	Value	Pounds	Value
Canned meats, total	16,323,000	\$6,002,000	14,145,000	\$5,031,000
Beef	2,215,000	797,000	2,025,000	732,000
Pork	8,614,000	3,413,000	7,946,000	2,970,000
Sausage	2,727,000	832,000	2,080,000	708,000
Other	2,966,000	958,000	2,094,000	623,000
Canned vegetables, total	80,096,000	8,635,000	85,100,000	8,914,000
Asparagus	17,002,000	2,511,000	20,562,000	3,169,000
Baked beans, and pork and beans	15,086,000	1,397,000	10,594,000	888,000
Corn	4,665,000	352,000	5,861,000	646,000
Peas	3,373,000	498,000	6,723,000	610,000
Soups	25,488,000	2,829,000	27,351,000	2,570,000
Tomatoes	6,725,000	402,000	4,000,000	295,000
Other	10,504,000	617,000	11,880,000	736,000
Condensed milk	36,975,000	5,891,000	39,598,000	6,298,000
Evaporated milk	71,968,000	7,421,000	72,861,000	7,418,000
Canned fruits, total	255,876,000	22,971,000	326,824,000	29,614,000
Apples and applesauce	13,746,000	802,000	27,599,000	1,452,000
Apricots	29,013,000	2,682,000	26,249,000	2,445,000
Berries	10,482,000	1,114,000	12,040,000	1,355,000
Cherries	1,719,000	277,000	2,202,000	346,000
Fruits for salad	(a)	(a)	(b) 16,552,000	(b) 2,407,000
Peaches	86,634,000	6,937,000	101,438,000	8,245,000
Pears	52,671,000	5,503,000	82,652,000	7,809,000
Pineapple	51,227,000	4,633,000	47,532,000	4,295,000
Prunes	2,448,000	233,000	2,779,000	261,000
Other	7,961,000	770,000	16,779,000	1,119,000
Salmon	28,986,872	4,616,964	44,833,740	7,563,935
Sardines	73,359,403	8,076,187	99,644,241	7,946,436

(a) Included in "Other canned fruit."

(b) January 1 to June 30.

American Sardines Dominate British Malayan Market

During the six months ended July 31 the United States supplied 95.7 per cent of the total imports of sardines into British Malaya, as compared with 87.7 per cent of the total for the preceding six months, according to the American vice consul at Singapore. The total imports for the six months ending July 31 were 6,677,733 pounds valued at \$527,345, and the share of the United States was 6,391,135 pounds valued at \$483,897.

For the year ending July 31, 1929, British Malayan imports of sardines totaled 11,545,490 pounds valued at \$954,519, of which the United States furnished 10,659,241 pounds valued at \$839,126.

Canadian Canned Food Imports

Imports of certain canned foods into Canada from the United States for the fiscal year ending March 31, 1929, according to the quarterly report of the Trade of Canada, are shown in the following table, compiled by the Foodstuffs Division of the Bureau of Foreign and Domestic Commerce:

	Pounds	Dollars
Canned peaches	10,007,938	712,088
Canned pineapple	3,432,477	475,585
Other canned fruits (a)	8,028,938	845,538
Canned meats (b)	895,996	75,333
Canned salmon	431,215	74,176
Canned milk	104,501	21,163
Canned vegetables	14,210,293	1,189,546

(a) Does not include fruit preserved in brandy or other spirits, or jellies, jams and preserves.

(b) Includes canned poultry and game.

Salmon Canneries Inspected

The quality of the salmon canned in Alaska is better this year than usual, say A. W. Hansen and H. C. Moore of the western district of the Food, Drug, and Insecticide Administration, after an inspection of 77 salmon canneries in Alaska. There was a light and uniform run of salmon in Alaska this year, except at Drier Bay and Port Nellie Juan in Prince William Sound, where the run was heavy.

The present modern equipment for canning salmon has so increased the speed and capacity of canneries as to materially reduce the chances of the fish spoiling on the cannery floors while waiting to be packed, as was so frequently the case in former years, according to a statement in the Official Record of the Department of Agriculture. Changes in ownership of plants that occurred in the last year have resulted in extending the control in the industry of certain large concerns which apparently realize the importance of putting out a quality article.

Use of Heat for Sterilizing Florida Grapefruit Authorized

The use of heat sterilization for Florida grapefruit as a condition of interstate movement is authorized in connection with packing houses in that State in administrative instructions

amending the quarantine on account of the Mediterranean fruit fly issued on October 23 by the Secretary of Agriculture.

This method of protecting citrus fruit from the possibility of being a means of spreading the Mediterranean fruit fly is one of the important developments resulting from the research work of the Department of Agriculture in connection with the fruit fly problem and may have far-reaching usefulness in the handling of fruit. This method has already been given practical application in the treatment and marketing of some 20 carloads of fruit, and fruit thus treated has been sold at normal including top prices in northern markets.

It should be distinctly understood, the Department says, that neither this nor any other method of sterilizing host fruits and vegetables from Florida is being given to infested fruit or vegetables.

Survey of Labor Legislation for Women Issued

In announcing the publication of a survey of all labor legislation for women workers in the country, the Women's Bureau of the U. S. Department of Labor states that fruit and vegetable canning and preserving is the only Delaware industry not covered by the 10-hour day and 55-hour week law for women workers in the state.

Fifteen states and the District of Columbia are reported as not exempting the canning industry in their general laws limiting daily and weekly hours of women workers in manufacturing. Two of the 10 states and the District of Columbia restricting the hours of labor for women to eight a day do not exempt canneries from this provision.

Although three states—California, Oregon, and Wisconsin—have excluded canning from the general hour law for women in manufacturing as Delaware has, they have placed restrictions on women's overtime in canneries by requiring an increased rate of pay, and may therefore, the Bureau states, be said to have regulated to a certain extent women's hours in this industry.

Delaware, which is not one of the leaders in hour legislation, stands, however, well towards the front among the 16 states revealed by the bulletin as having prohibited night work for women to some degree. As with the daily and weekly hour legislation in Delaware, night-work laws do not apply to the canning and preserving nor the preparation for canning and preserving of perishable fruits and vegetables.

Copies of the pamphlet are available from the Superintendent of Documents, Government Printing Office, Washington, at 40 cents each.

Publications of Interest to Canners

Tomato products spoilage.—The State Experiment Station at Geneva, New York, has recently issued a bulletin on "Control of Spoilage in Tomato Products," describing a study conducted by specialists at the station, covering both commercially and home canned products.

Production and marketing of peas.—The Agricultural Experiment Station at Cornell University has issued a report of 137 pages on the production and marketing of New York market peas, based upon cost records from 120 New York pea growers, marketing cost records from 3 cooperative marketing associations and 6 large commission firms, supplemented by data on carlot receipts from government records and wholesale prices from trade papers. The report contains voluminous statistics on all phases of pea production and marketing.

Convention Dates

Association of New York State Canners, December 12th and 13th, Hotel Niagara, Niagara Falls, N. Y.

Canners League of California, February 26th—March 1st, Hotel Del Monte.

Minnesota Canners Association, December 5th and 6th, Hotel Nicollet, Minneapolis.

Ohio Canners Association, December 10th and 11th.

Pennsylvania Canners Association, December 10, Hotel Yorktowne, York, Pa.

Wisconsin Canners Association, November 11, 12 and 13, Hotel Schroeder, Milwaukee, Wis.

Federal Reserve Board's Summary of Business Conditions

Industrial activity increased less in September than is usual at this season, according to the Federal Reserve Board's monthly summary. Production during the month continued above the level of a year ago, and for the third quarter of the year it was at a rate approximately 10 per cent above 1928. There was a further decline in building contracts awarded. Bank loans in-

creased between the middle of September and the middle of October, reflecting chiefly growth in loans on securities.

Output of iron and steel declined further in September contrary to the seasonal tendency; there was a sharp decrease in output of automobiles and automobile tires, and a smaller-than-seasonal increase in activity in the textile and shoe industries, which continued to produce at a high rate in comparison with the preceding year. Meat-packing plants were more active than in August. Factories increased the number of their employees during September and payrolls were also slightly larger. For the first half of October reports indicate a further reduction in steel plant operations.

Building contracts awarded in September declined seasonally from August and were substantially below the corresponding month in any year since 1924. For the third quarter the volume of contracts was 6 per cent less than a year ago. During the first three weeks of October, contracts continued substantially below the level of last year.

Freight-car loadings increased by slightly less than the usual seasonal amount in September, and continued to be larger than a year ago. In the first two weeks of October car loadings were smaller than in the corresponding weeks of 1928.

Department store sales in leading cities increased seasonally during the month of September and were 2 per cent larger than a year ago. For the third quarter as a whole sales of the reporting stores exceeded those of last year by 3 per cent.

Between the middle of September and the middle of October there was a slight increase in the volume of loans and investments of Federal Reserve member banks in leading cities. The bank's loans on securities increased rapidly, while all other loans, including loans for commercial and agricultural purposes, declined somewhat after reaching a season peak on October 2. Security holdings of the reporting banks continued the decline which has been almost uninterrupted for more than a year.

Use of Aluminum Instead of Tin for Canned Foods in Norway

A most interesting experiment is being made in Norway, which has possibilities of revolutionizing the canning industry, inasmuch as it has as its object the replacement of tin with aluminum, according to a report to the Department of Commerce from the commercial attache at Oslo. At present the experiment is limited to canned fish. Fifty thousand aluminum cans have been made up and used for canned fish balls and other fish products, part of which has been exported.